Rhode Island's
Alternative Conservation Systems (ACSs)

An Alternative Conservation System consists of a conservation practice or combination of practices that "substantially" reduces erosion on highly erodible land (HEL). ACSs were developed to meet the minimum requirements of the Food Security Act of 1985. ACSs could be used for planning with landusers who could not be reasonably expected to install Basic Conservation Systems (i.e. meet T) until July 3, 1996 (date of new Farm Bill enactment).

If no system was approved and the HEL field produced crops prior to July 3, 1996, a producer must now reduce erosion by 75% (of the potential erodibility), not to exceed 2T in order to remain eligible for USDA benefits. If there was no crop history prior to July 3, 1996, soil erosion must meet T. (See NFSAM IV, 512.01e)

No copy exists of Rhode Island's original list of ACSs. It can be assumed that they were similar if not identical to Connecticut's; a copy of the CT ACSs from 1988 follows. This assumption is bolstered by the fact that the 1993 version of CT ACSs (Vernon Field Office copy enclosed) is exactly the same as the RI ACSs, except the CT version does not include ACSs #13 - #15.

Conservation plans written in RI prior to 1993 use ACS#15 or its equivalent, so one can assume that an ACS was developed for specialty crops (potatoes, vegetables, flowers) prior to the 1993 publication. All use the conservation practices of conventional tillage, early cover crop and cross slope farming.

Conclusion: Conservation plans for HEL fields written prior to August 1993 should have ACSs equivalent to those listed in the May 1988 CTFOTG *unless* the crop is a specialty crop. The specialty crop ACS consists of conventional tillage, early cover crop and cross slope farming. Note that the 1988 ACSs resulted in soil loss around 2T. Plans for HEL fields written after August 1993 should have ACSs equivalent to those listed in the RIFOTG. IN NO CASE CAN SOIL LOSS EXCEED 4T (see NFSAM IV, 512.02c).

ALTERNATIVE CONSERVATION SYSTEMS

An Alternative Conservation System (ACS) consists of a conservation practice or combination of conservation practices that "substantially" reduces erosion on highly erodible land (HEL).

The objective in the planning and application of ACS's is to meet the minimum requirements of the Food Security Act (FSA) of 1985.

ACS's are available to landusers who cannot, for economic or other reasons, be reasonably expected to install a Basic Conservation System. The justification for the ACS must be documented in the conservation assistance notes.

During the planning process, the landowner will be provided with sound alternatives that include practices needed to upgrade an ACS to a basic conservation system.

The following page includes ACS's approved for use in Connecticut. Other practices may be substituted for those listed in a system, provided erosion is treated to a level equivalent to that shown in the examples. All installed practices must meet standards and specifications in FOTG Section IV.

These ACS's are based upon average field situations. Additional practices will be required when the actual field conditions require further treatment because of steeper or longer slopes or more intensive cropping operations. In addition to the ACS selected for the field, any ephemeral gully erosion must be treated to a level equivalent to that of sheet and rill erosion using the selected ACS.

SITUATION 1: Continuous silage corn, up and down slope farming, no cover, residues removed. Slope = 6%, 200 feet long. Agawam soil. (Alternative #1, #2, #3, or #4)

A = RKLSCP
A = 150 x 0.28 x 0.92 x 0.46 x 1
A = 18 tons per acre per year.

Alternative #1 - continuous silage corn, conservation tillage, cover crop, cross slope farming.

A = RKSLCP
A = 150 x 0.28 x 0.92 x 0.23 x 0.75
A = 7 tons per acre per year.

Alternative #2 - crop rotation of silage corn 3/4 years, hay 3/4 years, conventional tillage, cover crop, cross slope farming.

A = RKLSCP
A = 150 x 0.28 x 0.92 x 0.16 x 0.75
A = 5 tons per acre per year.

Alternative #3 - continuous silage corn, conventional tillage, contour strip crop w/buffers, cover crop.

A = RKLSCP
A = 150 x 0.28 x 0.92 x 0.37 x 0.4
A = 6 tons per acre per year.

Alternative #4 - continuous silage corn, contour farming, conventional tillage, cover crop, diversion/terrace.

A = RKLSCP
A = 150 x 0.28 x 0.67 x 0.36 x 0.5
A = 5 tons per acre per year.

SITUATION 2: Continuous silage corn, no cover, up and down slope farming, residues removed. Slope is 12%, 200 feet long. Charlton soil. (Alternative #6 or #7)

A = RKLSCP
A = 150 x 0.2 x 2.5 x 0.46 x 1
A = 34.5 tons per acre per year.

Alternative #6 - crop rotation of silage corn 2 years, hay 4 years, conservation tillage, cover crop, cross slope farming.

A = RKLSCP
A = 150 x 0.2 x 2.5 x 0.07 x 0.8
A = 4 tons per acre per year.

Alternative #7 - continuous silage corn, conservation tillage, contour farming, cover crop, diversion/terrace.

A = RKLSCP
A = 150 x 0.2 x 1.8 x 0.23 x 0.6
A = 7.5 tons per acre per year.

SITUATION 3: Continuous corn for silage, no cover, up and down slope farming. Slope is 17% for 200 feet. Paxton soil. (Alternative #5 or #6)
A = RKLSCP
A = 150 x 0.24 x 4.4 x 0.46 x 1
A = 73 tons per acre per year.

Alternative #5 - rotation of silage corn one year, hay 5 years, conventional tillage, cover crop, cross slope farming.

A = RKLSCP
A = 150 x 0.24 X 4.4 x 0.04 x 0.9
A = 6 tons per acre per year.

Alternative #6 - crop rotation of silage corn 2 years, hay 4 years, conservation tillage, cover crop, cross slope farming.

A = RKLSCP
A = 150 X 0.24 X 4.4 X 0.04 X 0.9
A = 6 tons per acre per year.

Connecticut
May 1988

ALTERNATIVE CONSERVATION SYSTEMS (ACS'S)

Connecticut Technical Guide
Vernon Field Office

Soil Capability Class II - 3 to 8 percent slopes

BEFORE CONDITION - CONTINUOUS SILAGE CORN PLANTED IN MAY, NO COVER, UP AND DOWN THE SLOPE DIRECTION, CHARLTON/PAXTON/WOODBRIDGE SOILS, MAXIMUM SLOPE OF 8 PERCENT AND SLOPE LENGTH OF 200 FEET.

BEFORE SOIL LOSS - A = RKLSCP
A = 150 X .24 X 1.4 X .46 X 1 = 23 tons per acre.

To produce continuous corn on slopes of 3 to 8%, landusers need to have an acceptable conservation system to reduce soil loss to not more than 11 tons per acre (reduction of 50% of the worst case, no treatment, condition of 23 tons per acre). This is to be achieved with the following constraint: LSC-max = 0.31. LS = 0.31/C and C = 0.31/LS.

If slope is at maximum of 8 percent for LCC #2 before condition, then slope length maximum must be reduced to no more than 120 feet for the following ACS conditions:

ACS #1 - Continuous silage corn, conventional plant in May, cross slope tillage, and fall cover established by October 1, annually.

AFTER SOIL LOSS (ACS #1)
A = RKLSCP = 150 X .24 X 1.1 X .31 X .9 = 11 tons per acre.
(If C = 0.31, then LS-max = 1.1 when P = 0.9)

ACS #2 - Continuous silage corn, conventional plant in May, up and down slope tillage, and fall cover established by September 15, annually.

AFTER SOIL LOSS (ACS #2)
A = RKLSCP = 150 X .24 X 1.1 X .28 X 1 = 11 tons per acre.
(If C = 0.28, then LS-max = 1.1 when P = 1.0)

For slope percents of less than the maximum 8 percent for LCC #2 conditions, the following adjustments can be made for ACS #1 and ACS #2:

PERCENT SLOPE	MAXIMUM LENGTH (FEET)
3	None
4	None
5	400
6	250
7	200
8	120

To meet requirements for using ACS #1 and ACS #2 for continuous silage corn, stay within the 400 feet maximum length for 5 percent slopes down to the maximum limit of 120 feet for 8 percent slopes.

ACS #3 - Continuous silage corn, reduced tillage with 20 percent cover after corn planting in May, cross slope tillage, and fall cover established by October 1, annually.

AFTER SOIL LOSS (ACS #3)
A = RKLSCP = 150 X .24 X 1.6 X .22 X .9 = 11 tons per acre.

ACS #4 - Continuous silage corn, reduced tillage with 20 percent cover after corn planting in May, up and down slope, and fall cover established by September 15, annually.

AFTER SOIL LOSS (ACS #4)
A = RKLSCP = 150 X .24 X 1.6 X .18 X 1 = 10 tons per acre.

ACS #5 - Rotation of silage corn for three years, conventional plant in May, cross slope tillage, fall cover established by October 1, annually, and hay planted for one year.

AFTER SOIL LOSS (ACS #5)
A = RKLSCP = 150 X .24 X 1.6 X .22 X .9 = 11 tons per acre.

ACS #6 - Rotation of silage corn for three years, conventional plant in May, cross slope tillage, fall cover established by October 1, annually and rye cover planted for ACR and managed for three years.

AFTER SOIL LOSS (ACS #6)
A = RKLSCP = 150 X .24 X 1.6 X .22 X .9 = 11 tons per acre.
(If C = .22 then LS-max = 1.6. At 8 percent slope, maximum slope length = 250 feet).

Example: LS = A/RKCP = 10/150 X .24 X .18 X 1 = 1.6

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Soil Capability Class III - 8 to 15 percent slopes

BEFORE CONDITION - CONTINUOUS SILAGE CORN, NO COVER, UP AND DOWN THE SLOPE DIRECTION, CHARLTON/PAXTON/WOODBRIDGE SOILS, MAXIMUM SLOPE OF 15 PERCENT AND SLOPE LENGTH OF 200 FEET.

BEFORE SOIL LOSS - A = RKLSCP
A = 150 X .24 X 3.6 X .46 X 1 = 60 tons per acre.

To produce silage corn on slopes of 8 to 15%, landusers need to have an acceptable conservation system to reduce soil loss to not more than 12 tons per acre. This is to be achieved with the following constraint: LSC-max = 0.37.

If slope is at maximum of 15 percent for LCC #3 before condition, then slope length maximum must be reduced to no more than 100 feet for the following ACS conditions:

ACS #7 - Continuous silage corn, conservation tillage with 30 percent cover after corn planting in May, cross slope tillage, and fall cover established by September 15, annually.

AFTER SOIL LOSS (ACS #7)
A = RKLSCP = 150 X .24 X 2.5 X .14 X .9 = 11 tons per acre.

ACS #8 - Rotation of silage corn for three years, conventional plant in May, cross slope tillage, fall cover established by October 1, annually, and hay planted for three years.

AFTER SOIL LOSS (ACS #8)
A = RKLSCP = 150 X .24 X 2.5 X .15 X .9 = 12 tons per acre.

ACS #9 - Rotation of silage corn for one year, conventional plant in May, cross slope tillage, fall cover established by September 15, and rye cover managed for ACR for three years.

AFTER SOIL LOSS (ACS #9)
A = RKLSCP = 150 X .24 X 2.5 X .15 X .9 = 12 tons per acre

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